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PRELIMINARY ANNOTATED LIST OF THE WASPS OF SAN SALVADOR ISLAND, THE BAHAMAS, WITH A NEW SPECIES OF *CERCERIS* (HYMENOPTERA: TIPHIIDAE, SCOLIIDAE, VESPIDAE, POMPILIDAE, SPHECIDAE)

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Abstract.—Twenty-three species of Aculeate Hymenoptera were collected from San Salvador Island, the Bahamas, between November 1975 and June 1978. Collection records for these species are compared with museum records and the literature to determine the source of the island's wasp fauna. A new species, *Cerceris* **watlingensis,** is described. Behavioral notes on *Stictia signata* and *Tachysphex alayoi* are included.

Aculeate Hymenoptera have been little studied in the Bahama Islands. Bahamian species and subspecies have been treated in taxonomic revisions, as, for example, in Bequaert's and Salt's (1931) and Bequaert's (1948) works on various Vespidae, Krombein's (1942) revision of the Myzininae (Tiphiidae), and Bradley's (1928) study of *Campsomeris* (Scoliidae). Krombein's (1953) paper on the aculeates of Bimini is one of the few works representing an extensive study of a particular island in the Bahamas. Since the Bimini group lies only about 50 miles off the coast of Florida, it would be expected to show many affinities with the Floridian fauna. But Krombein (1953) reported a large percentage of the Bimini wasps to be endemic species or subspecies, with only a small percentage of the species North American in origin. Many species considered endemic to the Biminis may be found on other islands in the Bahamas as they are explored. A similar study on one of the outer islands of the Bahamas would be instructive in providing further information about the origin of the Bahamian wasp fauna.

Since 1975 we have been collecting and observing aculeates on San Salvador Island in the Bahamas. This island, located about 400 miles southeast of the coast of Florida, is vegetated largely by subtropical scrub (Smith, 1975), with many brackish inland lakes.

Our paper lists collection records for wasps from the island and compares these records with those obtained from museum specimens and a survey of the literature. Higher taxonomic groups are arranged phylogenetically according to Muesebeck et al. (1951), and species are arranged alphabetically. Behavioral notes are included on certain of the species, and a new species, *Cerceris watlingensis* is described.

Representatives of the species collected and the types of *Cerceris watlingensis* have been deposited in the United States National Museum. Paratypes of *Cerceris watlingensis* have been deposited in the Cornell University collection. Duplicate specimens have been retained in the collections at the authors' institutions.

Abbreviations of institutions are given in Acknowledgments.

Tiphiidae

Myzinum apicale Cresson. ♀♀: 26 Nov. 1976, nr. Polaris; 7 Dec. 1976, Farquharson's Plantation; 6 June 1978, dump. ♂♂: 23 Nov. 1977, East Beach; 28 Nov. 1977, nr. Polaris (4); 29 Nov. 1977, Cockburntown; 9 June 1978, dump.

These individuals cannot be assigned to any of Krombein's (1942, 1953) subspecies. The males have only the last abdominal tergite ferruginous, whereas in typical *M. a. apicale* and *M. a. cazieri* Krombein (1953), the last two are ferruginous. The other subspecies of *M. apicale* described by Krombein (1942) lack ferruginous markings on the abdomen. Krombein (1953) reported Bahamian collection records for this species as follows: *M. apicale breve* from Rum Cay and New Providence; *M. a. eleuthera* from Eleuthera, and *M. a. jamaicense* from Turk's Island. He described *M. a. cazieri* from the specimens collected on Bimini.

Myzinum ephippium bahamense Krombein. ♂♂: 26 Nov. 1975, no specific locality; 23 Nov. 1977, Blacklands.

This species has previously been collected from Mariguana and Grand Bahama Island, but was not reported from the Biminis (Krombein, 1953).

Scoliidae

Campsomeris trifasciata nassauensis Bradley. ♀♀: 24 Nov. 1975; 24 Nov.–4 Dec. 1976, no specific locality; 9 Dec. 1975, 7 Dec. 1976, Farquharson's Plantation; 9 Dec. 1976, High Cay; 6 Dec. 1976, Snow Bay; 20 Nov. 1977, CCFL Base; 28 Nov. 1977, nr. Polaris; 1 Dec. 1977, Jake Jones' Road; 5 Dec. 1977, Sandy Hook; 12 Dec. 1977, nr. sinkholes. ♂♂: 21 Nov.–8 Dec. 1975 (28), 24 Nov.–1 Dec. 1976 (2), 28 Nov. 1977, no specific locality; 1 Dec. 1975 (3), 5 Dec. 1977 (2), Sandy Hook; 9 Dec. 1975, Farquharson's Plantation; 22 Nov.–11 Dec. 1976 (3), 14 June 1978, CCFL Base; 24–25 Nov. 1976 (3), 15 Dec. 1976 (1), 1 Dec. 1977 (8), 10 June 1978 (1), Jake Jones' Rd; 26 Nov. 1976, nr. Polaris; 22–25 Nov. 1977 (2), 6–9 June 1978

(4), dump; 23 Nov. 1977, Blacklands (2); 5 Dec. 1977, nr. French Bay; 5 Dec. 1977, Sandy Pt.

Males of this species are frequently collected on flowers along paths into the island's interior. Bradley (1928) described the subspecies from specimens collected at Nassau, and Krombein (1953) reported it from the Biminis. In addition, we have examined a series of two females and nine males from Mangrove Cay, Andros (CU).

Vespidae

Polistes exclamans picturatus Bequaert and Salt. ♀♀: 20 Nov.–8 Dec. 1975 (17), 23 Nov. 1976 (1), 23 Nov. 1977 (2), no specific locality; 20 Nov. 1976, nr. French Bay; 22–24 Nov. 1976 (8), 2 Nov. 1977 (1), CCFL Base; 24–25 Nov. 1976 (3), 1 Dec. 1977 (1), Jake Jones' Rd; 28 Nov. 1976 (1), 28 Nov. 1977 (2), nr. Polaris; 2 Dec. 1977, Watlings' Castle; 2 Dec. 1977, Guana Cay (2); 5 Dec. 1977, Sandy Pt; 8 Dec. 1977, trail to N. Granny L. ♂: 23 Nov. 1977, no specific locality.

While our specimens agree in general with Bequaert's and Salt's (1931) description of the holotype of this subspecies, there is variation among our specimens not accounted for in the original description. Bequaert and Salt (1931) listed the presence of four longitudinal yellow bars on the mesonotum as one of the distinguishing characteristics of the subspecies. In several specimens of *P. e. picturatus* from San Salvador, the lateralmost pair of bars is reduced or lacking. There is also variation in the extent of yellow on the propodeum. This subspecies has previously been reported from San Salvador (Krombein, 1953), and from other Bahamian localities including Acklin, Mariguana, Rum Cay, Crooked Island, Long Island and Cat Island.

Polistes major (Palisot de Beauvois). ♂♂: 22 Nov.–6 Dec. 1975 (12), 22 Nov. 1976 (1), 23 Nov. 1977 (1), no specific locality; 24 Nov. 1976, Jake Jones' Rd; 30 Nov. 1976, Sandy Hook; 2 Dec. 1976, Watlings' Castle; 7 Dec. 1976, Farquharson's Plantation; 8 Dec. 1976, High Cay (2); 20 Nov. 1977, CCFL Base; 22–23 Nov. 1977, dump (4); 23 Nov. 1977, East Beach; 28 Nov. 1977, nr. Polaris.

Krombein (1953) noted that this species had previously been collected on Eleuthera in the Bahamas, but did not report it from Bimini.

Mischocyttarus cubensis Saussure. ♀♀: 23 Nov.–9 Dec. 1975, no specific locality (12); 24 Nov. 1976 (1), 24 Nov.–1 Dec. 1977 (2), Jake Jones' Rd; 26 Nov. 1976, nr. Polaris; 21 Nov. 1977, CCFL Base (2); 22 Nov. 1977, dump; 5 Dec. 1977, limestone pit nr. French Bay.

The collection records for museum specimens of this species indicate a range which includes localities in Florida, South Carolina, Texas, Cuba (USNM), and Honduras (CU). Bahamian records are from Bimini, Nassau (USNM), New Providence, Eleuthera and Watlings' Island (MCZ).

Zethus bahamensis Bequaert and Salt. ♂: 30 Nov. 1976, Sandy Hook.

Bequaert and Salt (1931) described this species from specimens collected at Nassau. We have examined an additional specimen from Cat Island (MCZ).

Pachodynerus nasidens (Latreille). ♀: 30 Nov. 1977, Sandy Hook.

Collection records for museum specimens of this species include Cuba, Mexico, Brazil, Peru, Argentina, Guyana, Surinam, and Canal Zone (CU). Bequaert (1948) reported that New Providence was the only Bahamian locality from which the species had been collected. Krombein (1953) did not include the species in his list of Bahamian wasps.

Pachodynerus scrupeus (Zavattari). ♀♀: 1–2 Dec. 1975 (6), 30 Nov. 1976 (2), 30 Nov. 1977 (1), Sandy Hook; 6 Dec. 1975, 14 Dec. 1976, no specific locality; 6 Dec. 1976, nr. Pigeon Creek; 22 Nov. 1977, dump. ♂♂: 1–2 Dec. 1975 (6), 5 Dec. 1977 (1), Sandy Hook; 3–4 Dec. 1975 (2), 25 Nov. 1976 (1), no specific locality; 2 Dec. 1977, Guana Cay; 6 June 1978, dump; 16 June 1978, CCFL Base.

Pachodynerus scrupeus var. *bahamensis* Bequaert and Salt. ♀♀: 1–2 Dec. 1975 (4), 30 Nov. 1976 (1); 30 Nov. 1977, Sandy Hook; 21 Nov.–4 Dec. 1975, no specific locality; 24–25 Nov. 1976 (4), 24 Nov.–1 Dec. 1977 (3), Jake Jones' Rd; 26 Nov. 1976, 28 Nov. 1977, nr. Polaris; 2 Dec. 1977, Guana Cay; 5 Dec. 1977, Sandy Pt.; 8 Dec. 1977, trail to N. Granny L. ♂♂: 1–2 Dec. 1975 (2), 30 Nov. 1976 (2), Sandy Hook; 22 Nov. 1976, CCFL Base.

Bequaert and Salt (1931) described the variety *Pachodynerus scrupeus bahamensis* from a single specimen collected at Mangrove Cay, Andros. This variety was distinguished from typical *P. scrupeus* by having the basal portion of the first abdominal tergite red. Bequaert (1948) reported additional individuals of the typical form from Cuba, Cat Island, New Providence, Rum Cay and Eleuthera; he reported the Bahamian subspecies from New Providence, Cat Island, Long Island and Watlings Island, now San Salvador. Krombein (1953) reported both forms from South Bimini. On San Salvador both forms have been collected from the same population. Thus this variation should be considered a case of polymorphism, and the variety *P. s. bahamensis* should be considered invalid.

Pompilidae

Episyron conterminus posterus (Fox). ♂: 6 June 1978, dump.

This is a widely distributed species with its range extending from California and New York to Guatemala according to Muesebeck et al. (1951).

Anoplius fulgidus (Cresson). ♀♀: 12 Dec. 1975, Jake Jones' Rd; 2 Dec.

1977, Guana Cay; 8 Dec. 1977, trail to N. Granny L. (3); 10 Dec. 1977, no specific locality. ♂♂: 8 Dec. 1977, trail to N. Granny L. (2).

According to Muesebeck et al. (1951), the range of this species includes the Greater Antilles, as well as Mexico, Texas, Florida, Utah and California, but it was not reported from Dominica by Evans (1972), nor did Krombein (1953) include it among the Pompilidae previously collected from the Bahamas. Museum specimens examined came from the following non-Bahamian localities: Jamaica (USNM, BMNH, MCZ), St. Croix, St. Thomas, Peru, Bolivia, Honduras, Texas (USNM), Puerto Rico (USNM, MCZ), Florida, Guatemala (USNM, BMNH), Mexico (BMNH), Haiti, Cuba (USNM, MCZ). The only Bahamian specimens we examined came from Androstown, Andros (USNM, MCZ).

Anoplius insignis bahamas Krombein. ♀♀: 2 Dec. 1975 (2), 30 Nov. 1977, Sandy Hook; 6 Dec. 1976, Snow Bay.

This species was described by Krombein (1953) with the holotype and allotype specimens from Nassau. Additional collection records listed by Krombein included South Bimini and Moraine Cay.

Sphecidae

Tachytes tricinctus (F.). ♀♀: 6–17 June 1978, CCFL Base. ♂♂: 6 June 1978, dump; 19 June 1978, Graham's Harbor to Barker's Pt (2).

Krombein (1953) described a subspecies, *Tachytes cubensis bimini* from a series of males collected in Bimini. Bohart and Menke (1976) treated *T. cubensis* as a synonym of *T. tricinctus,* and transferred Krombein's subspecies to a different species, *T. distinctus*. Specimens of *T. tricinctus* which we examined were collected from Cuba (USNM).

Tachysphex alayoi Pulawski. ♀♀: 6–9 June 1978, dump (2); 6–17 June 1978, CCFL Base (5). ♂♂: 6–9 June 1978, dump; 10–16 June 1978, CCFL Base (8).

Pulawski (1974) included the following localities in the known geographic distribution of this species: Cuba, Jamaica, Puerto Rico and the Virgin Islands. Bohart and Menke (1976) added Florida to its known range. Thus this is apparently the first published record of the species' occurrence in the Bahamas. Krombein (1953) reported *Tachysphex terminatus* (Smith) from North Bimini. While that species is primarily North American in distribution, Pulawski (1974) reported its occurrence in South America as well.

Three females of *T. alayoi* were collected with roaches, all individuals of *Symploce* sp. nr. *munda* Gurney; one was an adult male, the other two were nymphs. In all cases these females were collected on the ground, having flown down from nearby vegetation. The ratio of weights of the prey to those of the females varied from 1.98 to 2.76:1.

Liris antilles Krombein. ♀♀: 22–29 Nov. 1975, CCFL Base (3); 6 Dec. 1975, 25–26 Nov. 1976 (2), 23 Nov.–1 Dec. 1977 (2), no specific locality; 9 Dec. 1976, High Cay. ♂♂: 30 Nov.–6 Dec. 1975 (2), 23 Nov. 1976 (1), 30 Nov. 1977 (1), 6–10 June 1978 (2), CCFL Base; 1 Dec. 1975, no specific locality; 8 Dec. 1977, trail to N. Granny L.

This species was described by Krombein (1953) from holotype and allotype specimens collected on South Bimini. He reported other individuals of the species from New Providence, Cat Island, and Cuba.

Liris argentata (Beauvois). ♀: 22 Nov. 1975, CCFL Base. ♂♂: 29 Nov. 1975, CCFL Base; 6 Dec. 1975, no specific locality.

While this species is primarily North American in its distribution, Bohart and Menke (1976) included Cuba, the Bahamas and Hawaii in its distribution. Krombein (1953) reported its occurrence on South Bimini.

Sphex jamaicensis (Drury). ♀♀: 22 Nov. 1975 (2); 23 Nov.–15 Dec. 1976 (2), 21 Nov.–14 Dec. 1977 (4), 14–15 June 1978 (2), CCFL Base; 22 Nov.–10 Dec. 1975, no specific locality (9); 29 Nov. 1975 (1), 24 Nov.–13 Dec. 1976 (2), 24 Nov.–1 Dec. 1977 (2), Jake Jones' Rd; 30 Nov. 1976, nr. French Bay; 30 Nov. 1977, Sandy Hook; 6 Dec. 1976, Snow Bay; 22 Nov. 1977, dump. ♂♂: 19 Nov.–4 Dec. 1975, no specific locality (2); 6 Dec. 1975, CCFL Base; 6 Dec. 1976, Snow Bay (2); 26 Nov. 1977, nr. Polaris.

Museum records indicate that this species is found in Florida (CU, MCZ, USNM), Jamaica (BMNH, USNM), and Cuba (USNM). These records agree with the distribution of the species as reported by Bohart and Menke (1963). Bahamian records include the following: Nassau (BMNH, MCZ, USNM), Long Island, Crooked Island, Rum Cay, S. Eleuthera, Cat Island (MCZ), Andros (MCZ, USNM), and the Biminis (USNM).

Prionyx thomae (F.). ♀♀: 22 Nov.–6 Dec. 1975 (5), 7–12 June 1978 (3), CCFL Base; 24 Nov.–15 Dec. 1975, no specific locality (6); 1–2 Dec. 1975 (6), 30 Nov. 1976 (2), Sandy Hook. ♂♂: 24 Nov.–6 Dec. 1975 (6), 23 Nov. 1976 (2), 11–13 June 1978 (4), CCFL Base; 26 Nov. 1976, nr. Polaris (2); 28 Nov. 1978, no specific locality.

This species was recorded by Bohart and Menke (1976) as occurring in western and southeastern United States, Central and South America, and the West Indies. Our studies of museum specimens substantiate this wide distribution. Bahamian records of specimens we examined included the following localities: Rum Cay, New Providence, and Simons, Long Island (MCZ). The species, however, was not listed by Krombein (1953) among those occurring in the Bahamas.

Sceliphron jamaicense (F.). ♀♀: 3 Dec. 1975, no specific locality; 8 June 1978, dump; 12 June 1978, CCFL Base; 19 June 1978, nr. N. Point.

Krombein (1953) reported this species from South Bimini. Museum specimens we examined included individuals from Cuba, Dominican Republic (BMNH, CU), Turks and Caicos Islands, and Jamaica (BMNH).

Stictia signata (L.). ♀♀: 24 Nov.–8 Dec. 1975 (15), 26 Nov.–7 Dec. 1976 (2), 23–27 Nov. 1977 (3), no specific locality; 24 Nov. 1976, 9 June 1978, Jake Jones' Rd; 22 Nov.–9 Dec. 1976, CCFL Base (4); 26 Nov. 1976, nr. Polaris (3); 2 Dec. 1976, Watlings' Castle; 15–16 Dec. 1976 (6), 22 Nov. 1977 (2), 9 June 1978 (1), dump; 23 Nov. 1977, Blacklands (2); 30 Nov. 1977, Sandy Hook; 19 June 1978, Graham's Harbor to Barker's Pt. ♂♂: 20–24 Nov. 1975 (5), 22 Nov. 1976; 23 Nov. 1977, no specific locality; 23 Nov. 1976, CCFL Base; 30 Nov. 1976, Sandy Hook.

This is a widespread tropical species, as indicated by collection records on museum specimens from Peru, Brazil, Venezuela, Paraguay, Panama, Dominican Republic, Mexico, Jamaica, St. Vincent, Grenada, Martinique (USNM), Guyana, Cuba, Puerto Rico (CU, USNM). Bahamian records include the following localities: Andros (CU, MCZ, USNM), Arthurstown, Cat Island, Clarencetown, Long Island, Crooked Island (MCZ) and Nassau (USNM). Krombein (1953) reported this species from Bimini.

One of us (S.C.) studied nesting and predatory behavior of *Stictia signata*. This is one of the few tropical species on which previous behavioral studies have been published (Evans, 1966, 1972; Richards, 1937).

One female was observed digging a nest in sandy soil at the edge of the softball field at the CCFL base at about 1500 on 27 November 1976. The nest was in progress when observations were begun, and the female was making successive digging trips below the surface. She reentered the nest nine times, spending between 40 and 49 ($\bar{x}$ = 43.2) sec inside the burrow each time. She then backed out and distributed accumulated sand. Having completed the burrow, she backed out of the entrance and scraped sand backward into the entrance, filling it completely. Then she leveled the tumulus that had accumulated outside the burrow. Following completion of leveling, she made short flights around the area, pulling small pebbles away with the forelegs and mandibles. Finally she flew away to hunt. In about 15 min, she returned with prey, carrying it with the second and third pairs of legs. She opened the nest and entered directly, spending 10 min below the surface. Then she spent 4 min reclosing the entrance before flying away to hunt.

All of the provisioning females we observed entered their nests directly except for one female with a very large sarcophagid. This prey was deposited near the entrance while the female opened and entered it. She exited, and approached the nest again, digging at the surrounding sand as she did so. The prey was partly covered with sand in the process. She entered the nest again, then exited and uncovered the prey, and moved it closer to the

entry. Then she reentered the nest. Finally she reappeared in the entrance, head first, and pulled the prey backwards into the nest.

Females varied in the completeness of temporary nest closures and tumulus leveling. In the case mentioned above, the nest was filled completely and the tumulus fully leveled before the female flew away to hunt. On 1 December 1976, another female was observed carrying prey to her nest. When first observed, she was making a temporary closure by scraping sand into the entrance. Within six minutes, she returned with prey, repeated the temporary closure and flew away again. Upon her return to the nest, 21 min later, she left the nest partly open. In 3½ min she returned with prey, entered, and made a more complete closure upon leaving. She returned 28 min later, and left the nest with virtually no closure. During the next two returns to the nest, she made rudimentary closures of 6 and 3 sec duration. Another female we observed spent 51 sec making a closure. Thus there is variability between individuals and between successive closures by the same female.

Females hunted at various sites to which the flies they preyed upon were attracted. We observed females hunting at the garbage dump near Graham's Harbor and near vertebrate carrion. Evans (1966) reported their capturing flies near livestock. Perhaps such attraction explains the annoyance these wasps cause by flying at humans in the tropics and subtropics. Indeed, Richards (1937) reported that a female *Stictia* captured a tabanid from the neck of one of the observers in his party.

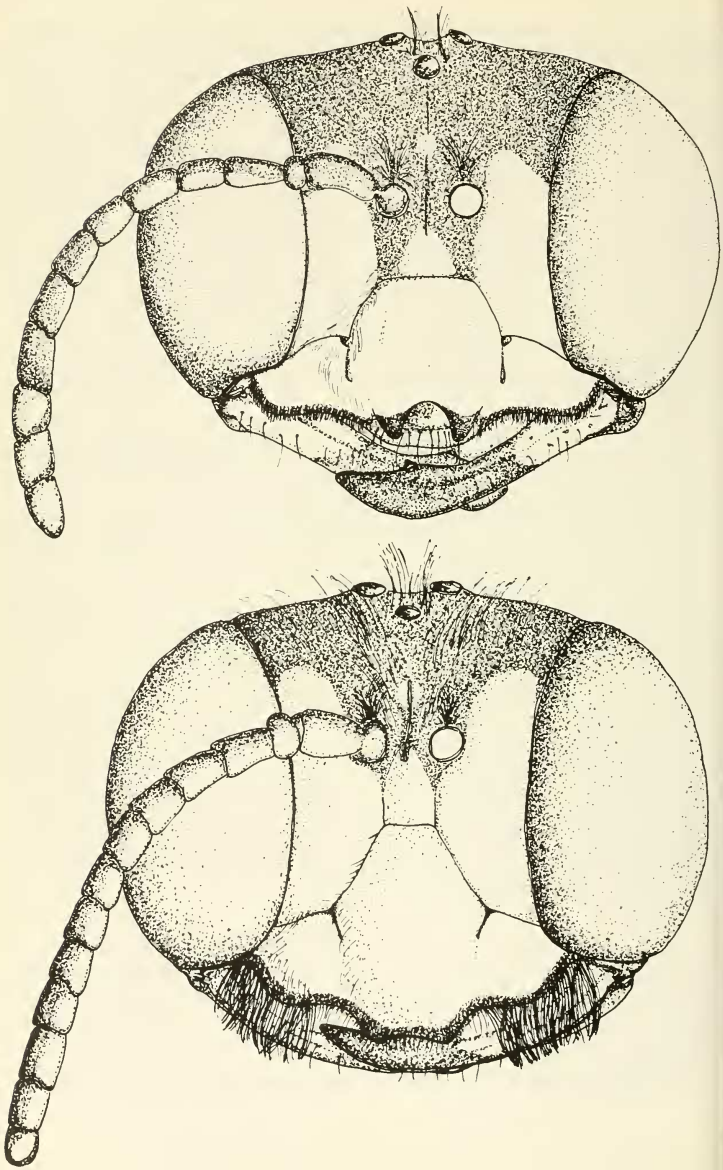
A hunting female approached a would-be prey, grabbing it with the fore and middle legs. The sting was inserted while the female was in flight. She then flew away with the sting still inserted in the fly.

While excavating nests of other sphecid wasps, we discovered several old cells of *S. signata*. One cell was located at a depth of 25 cm; it was 25 mm long and 15 mm high, and contained debris from at least 11 flies, as indicated by a count of head capsules. Another was at a depth of 27 cm and contained at least six head capsules. A third was found 13 cm below the surface; it was 4.2 cm long, 2.0 cm high, and 1.4 cm wide. It contained a cocoon which was 2.3 cm long and 0.9 cm in diameter. Chief families of Diptera utilized as prey by *S. signata* on San Salvador included Syrphidae, Muscidae, Sarcophagidae, and Calliphoridae.

Cerceris watlingensis Elliott and Salbert, NEW SPECIES

A new species of *Cerceris* was collected during the studies on San Salvador. We propose the name *watlingensis* for the old name for San Salvador Island, and for Watlings' Castle, one of the localities on the island from which it has been collected.

Female.—*Length:* 10.1 mm–18.5 mm.



Head: Frons, clypeus whitish yellow, punctate with whitish appressed setae; setae on lateral margins of clypeus longer, silvery and appressed ventrally. Clypeal process bidentate; teeth and ventral margin of process black. Interantennal ridge black, terminating between 2 minute yellow spots on the vertex. Vertex black, granular, punctate, with sparse erect setae. Gena behind eye bearing yellow macula. See Fig. 1.

Thorax: Pronotum black at base with swollen yellow posterior margin; pronotal lobe, tegula mostly yellow; scutum black; metanotum black except for 2 minute yellow spots. Scutellum largely yellow except lateral portion adjacent to wing attachment. Propodeum yellow dorsolaterally, but black area surrounds propodeal enclosure; propodeum punctate with erect setae; propodeal enclosure triangular, black at base and apex, but largely yellow; finely and shallowly punctate. All coxae black with yellow maculation; trochanters largely yellow; femora black; foretibiae and tarsi yellow; mid- and hindtibiae yellow at base, black apically; tarsi dark. Lateral margins of hindtibiae coarsely toothed with a row of setae. Larger of hindtibial spurs pectinate.

Abdomen: First abdominal tergite with broad yellow band, narrowed medially; 2nd through 5th tergites with successively narrower yellow bands; all but most posterior concave anteriorly. Pygidium granular, coarsely punctate. Abdominal sternites mostly black, 2nd and 3rd with small lateral yellow spots.

The females in the type-series agree in general with the above description of the holotype. The color of the frons and vertex varies from deep yellow to whitish; a few females have the setae in these areas reduced or lacking. Otherwise there is variation in the extent of yellow markings on the tegulae and propodeal enclosure. Terminal flagellomeres are ferruginous in a few females.

Male.—*Length:* 9.5–10.5 mm.

Head: See Fig. 2. Frons and clypeus yellow, smooth, punctate with whitish erect setae. Frontoclypeal suture clearly defined; suture around tentorial pits divides clypeus into three parts. Golden hairs on lateroventral margin of clypeus form brush-like structure. Interantennal ridge black, ending just behind a yellow spot on the vertex. Vertex granular, punctate, with scattered setae.

Thorax: Thorax black except as noted below. Posterior margin of pronotum yellow and swollen as in female. Central portion of tegula yellow. Median portion of scutellum yellow. Propodeum black, shining with yellow

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Figs. 1, 2. *Cerceris watlingensis,* frontal view of head. 1, Female, upper figure. 2, Male, lower figure. (Drawn by Thomas Caperna, Syracuse University.)

lateral maculae, large, well-spaced punctures with erect setae; propodeal enclosure with more closely-spaced, but shallow punctures, triangular, entirely black. All coxae black with yellow maculation; trochanters yellow; femora black; fore and mid-tibiae and tarsi yellow; basal ½ of hindtibiae yellow; apical ½ black; hind tarsi dark.

Abdomen: Abdominal tergites 2 through 4 with subapical yellow bands complete, slightly narrowed medially; tergites 5 and 6 with yellow band incomplete medially. Pygidium shining, with a few widely scattered punctures. Abdominal sternites mostly black; sternites 2 through 5 with posteriolateral yellow markings.

Genitalia: See Fig. 3. Aedeagus elongate, with head of valves simple, lacking teeth or setae; volsella short, stout and simple, gonostyle elongate, slender and bearing a few scattered setae on distal ⅓.

The males of the paratype series agree with the description of the allotype male except for slight variation in color pattern. Only a few males have the yellow spot on the vertex near the posterior extent of the interantennal ridge; a few males have the hindtarsi distinctly black. One male has two small yellow markings on the propodeal enclosure.

Types.—*Holotype female:* 28 Nov. 1977, dump. *Allotype male:* 14 Dec. 1977, dump. *Paratypes:* ♀♀: 30 Nov. 1977, Sandy Hook; 1 Dec. 1977, Jake Jones' Rd; 6–14 Dec. 1977, dump (10); 8 Dec. 1977, trail to N. Granny Lake. ♂♂: 21 Nov.–14 Dec. 1977, dump (6).

Distribution.—The species is known only from specimens collected on San Salvador Island, but studies on neighboring islands may show that it occurs there as well. Other localities on San Salvador from which the species has been collected include Sandy Point, Watlings' Castle and the CCFL Base.

Discussion.—This species is distinguished from the various Cuban species we have examined on the basis of clypeal characteristics of the female. *Cerceris festiva* Cresson has a more extensive yellow pattern on the face, and its clypeal process forms a shallow inverted U rather than a deep V-shaped notch as in *C. watlingensis*. Females of *C. hatuey* Alayo have the face more deeply punctate, and although the clypeus is raised, it is not toothed. *Cerceris triangulata* Cresson has the face and vertex entirely yellow, and the clypeal process consists of two cuticular pieces. *Cerceris zonata* Cresson (=*cubensis*), which is very small in comparison with *C. watlingensis*, has a slightly swollen clypeus, but no clypeal process. We have examined only males of *C. cerverae* Giner Mari, but this species is distinguished by the black clypeus of the male with its central yellow marking and an elongate yellow stripe on the scape. We were unable to examine two additional Cuban species, but these are also distinct from *C. watlingensis*. *Cerceris flavocostalis* Cresson lacks the deeply incised clypeal process, as

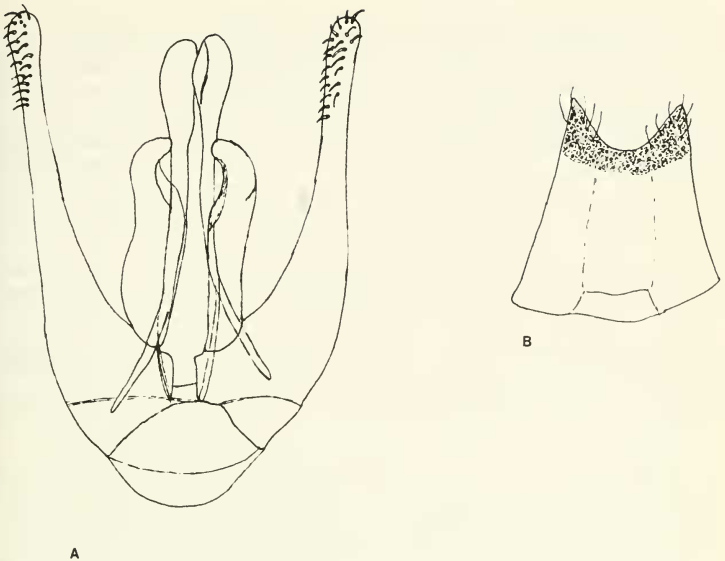

Fig. 3. *Cerceris watlingensis*, male genitalia. A, Genitalia. B, Subgenital plate.

does *C. trinitaria* Alayo. The latter also has a rounded keel surrounding the clypeal process (Alayo, 1968).

Cerceris zonata Cresson. ♀♀: 10 June 1978, dump; 17 June 1978, CCFL Base. ♂: 13 June 1978, CCFL Base.

This species was not reported from the Bahamas by Krombein (1953); Bohart and Menke (1976) reported it only from Cuba.

Ectemnius auriceps (Cresson). ♂: 26 Nov. 1977, dump.

This species was reported from the Bahamas by Pate (1947). It was not collected from Bimini (Krombein, 1953). Bohart and Menke (1976) included Cuba and the Bahamas in the species distribution.

Discussion

A total of 23 species of Aculeate Hymenoptera were collected during our studies on San Salvador. Eleven of these (48%) were also reported from Bimini (Krombein, 1953). One new species, *Cerceris watlingensis*, has been described as a result of our collections. It cannot be considered endemic to

San Salvador, however, because of lack of collection data from the nearby islands. The largest percentage of species we collected (30%) may be considered West Indian in their distributions (*Myzinum apicale, Pachodynerus scrupeus, Sceliphron jamaicense, Liris antilles, Tachytes tricinctus, Cerceris zonata, Ectemnius auriceps*); 17% have been collected only from the Bahamas (*Campsomeris trifasciata nassauensis, Myzinum ephippium bahamensis, Zethus bahamense, Anoplius insignis bahamas*). Three of the names listed in the latter group belong to Bahamian subspecies of West Indian species with wider distributions, however. Five species (*Mischocyttarus cubensis, Pachodynerus nasidens, Anoplius fulgidus, Sphex jamaicensis,* and *Tachysphex alayoi*) have been reported from the West Indies and southern United States. Several species are more widely distributed. *Polistes major, Stictia signata,* and *Episyron conterminus posterus* are distributed from the southern United States through Central and South America. *Prionyx thomae* and *Liris argentata* are widely distributed in North America. Our paper apparently reports the first Bahamian collection records for *Tachytes tricinctus, Tachysphex alayoi,* and *Cerceris zonata.*

We found that seasonality is a factor in the distributional flight patterns of the wasps on San Salvador. Since the weather is satisfactory for wasp activity throughout the year, we had expected many of the same species to be active at all times. A collecting trip to study sphecids in June 1978 proved that this was not the case. Three species of sphecids, which we had not collected in November and December, were active at this time. They were *Tachytes tricinctus, Tachysphex alayoi,* and *Cerceris zonata. Sceliphron jamaicense,* which we had collected once in December, was more common in the summer. Other species, including *Stictia signata, Prionyx thomae,* and *Sphex jamaicensis,* seemed to be active at approximately the same level at both times of year. *Cerceris watlingensis* individuals were present in June, but their level of activity was much lower than in November and December.

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